

United States Patent [19]

Nayak et al.

[11] Patent Number: 4,752,473

[45] Date of Patent: Jun. 21, 1988

[54] EXPRESSION OF GLYCOSYLATED HUMAN INFLUENZA HEMAGGLUTININ PROTEINS

[75] Inventors: Debi P. Nayak; M. Abdul Jabbar,
both of Los Angeles, Calif.

[73] Assignee: The Regents of the University of California, Berkeley, Calif.

[21] Appl. No.: 660,441

[22] Filed: Oct. 12, 1984

[51] Int. Cl.⁴ A61K 39/00; C07K 7/10

[52] U.S. Cl. 424/88; 530/324

[58] Field of Search 530/395, 324; 435/317;
536/27; 424/88

[56] References Cited

FOREIGN PATENT DOCUMENTS

60057 2/1982 European Pat. Off.

PUBLICATIONS

Nature 289, (1981), 366-373.

Nature 303, (1983), 41-44.

Hitzeman et al., *Science*, vol. 219, pp. 620-625, (2/83).

Kramer et al., *Proc. Natl. Acad. Sci.*, vol. 81, pp. 367-370, (1/84).

Tuite et al., *The Embo Journal*, vol. I, No. 5, pp. 603-608, (1982).

Derynck et al., *IRL Press Ltd.*, vol. II, No. 6, (1983), pp. 1819-1837.

Hitzeman et al., (1981), *Nature (London)*, 293, 717-722.

Miyanohara et al., *Proc. Natl. Acad. Sci.*, vol. 80, pp. 1-5, (1/83).

Goff et al., *Gene*, (1984), pp. 35-46.

Ammerer et al., *Nature*, vol. 298, (7/82), pp. 347-350.

Mellor et al., *Gene*, (1983), pp. 1-14.

Primary Examiner—Delbert R. Phillips

Attorney, Agent, or Firm—Poms, Smith, Lande & Rose

[57] ABSTRACT

Glycosylated polypeptides corresponding to antigenic portions of mature human influenza hemagglutinin are microbially produced in *S. cerevisiae*. The glycosylated polypeptides are effective as vaccination agents, since the glycosylated polypeptides closely mimic the naturally occurring mature influenza hemagglutinin which is also glycosylated.

5 Claims, 1 Drawing Sheet